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'Doctors are still stunned:' How did foreign bacteria leave a Texas girl with brain damage ?

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For most of the past six weeks, 4-year-old Lylah Baker has been struggling to survive an infection that doctors at Children's Medical Center Dallas couldn't beat back. It started out like a typical stomach bug, but within days tore through her body and into her brain.

Lylah's family told me that doctors thought she had a rare autoimmune disorder that can be triggered by an infection. They put a tube down her throat to help her breathe. They gave her CT and MRI scans, and hooked her to machines to filter and replace her blood. They administered steroids and multiple antibiotics. She still wasn't getting any better.

"They were even treating her for rabies, just to be cautious, even though she had never been bitten," said Lylah's aunt, Ashley Kennon, who is a nurse.

Eventually a test found an organism growing in Lylah's blood that initially eluded identification. It was only after a neurosurgeon took a small sample from Lylah's brain that the hospital was able to confirm this curly haired little girl from a small Texas town had been infected with deadly foreign bacteria that aren't supposed to be sickening people in the United States.

"I think the doctors are still stunned. Nobody expected this," Kennon told me.

The Centers for Disease Control and Prevention sent an advisory on June 30 to health professionals across the country warning that three people who live nowhere near each other – one each in Minnesota, Kansas and Texas – have been seriously sickened since March from infections with a potentially deadly type of bacteria called Burkholderia pseudomallei. It is supposed to be found only in tropical climates, primarily in Southeast Asia and northern Australia, where it infects humans and animals through direct contact

with contaminated soil and water. That's where it lives and grows.

Threat response: I was a first responder at Chernobyl. It should have prepared America for disaster.

"These three cases are unusual because no recent travel outside the United States has been identified," the CDC said in its advisory. Adding to the mystery, the agency said that genomic tests on bacteria that infected each of these very different people suggests a common source of exposure, "such as an imported product or animal."

I've reported on medical mysteries like this for years, including tracking the very bacteria that sickened Lylah, and here's what I've learned: Investigating the source of deadly infectious diseases in an increasingly interconnected world is vitally important because the lives of real people are at stake.

With human beings jetting across the globe, encroaching on wild habitats and trading in international wildlife and common household products, emerging pathogens can quickly move between continents and find their way to our doorsteps. The politicking and foot dragging that has hamstrung the search for the origin of COVID-19 is not how these investigations are supposed to go.

Knowing where a pathogen came from is critical in preventing future outbreaks – and saving people from the kind of suffering that Lylah and her family are going through.

'Risk of exposure in the United States is unknown but is believed to be low'

Lylah, the only child among the three cases in CDC's alert about the Burkholderia pseudomallei outbreak, has brain damage from her infection, her aunt told me.

"She's lucky to be alive," said Kennon, who is serving as a spokesperson for Lylah's parents, Josy and Dustin Baker, who have spent day and night with her at the hospital.

"The brain damage she has from this is pretty extensive," Kennon said. "This is a little girl, 4 years old, who was walking and talking and so excited for preschool in the fall, who now can't speak and can't hold her head up, can't walk. It's kind of like starting over."

Investigators from the CDC and three state health departments are in the early stages of trying to figure out how Burkholderia pseudomallei bacteria that aren't native to the United States could have sickened three people who currently seem to have no connection to each

other.

“At this time, the risk of exposure in the United States is unknown but is believed to be low,” the agency said in a statement.

Protecting ourselves: Magnets, vaccines and the toll of the conspiracy of misinformation on our health

The bacteria cause a disease called melioidosis that is difficult to diagnose because of wide-ranging and nonspecific symptoms that can appear days – or even years – after exposure. And it’s deadly: killing 10% to 50% of those who become infected.

Few details have been released by health officials about the other two people, both adults, who were infected. According to the health alert, one is male, the other is female. The first case to be identified was in March and that person died. The other adult, like Lylah, became ill in May and has been discharged from an unidentified hospital into a transitional care unit.

Their initial symptoms ranged from coughing and shortness of breath to fatigue, nausea and vomiting; there were rashes and fevers that came and went, the CDC said. The patients were later diagnosed with infectious encephalitis, an inflammation of the brain. The person who died 10 days after being hospitalized had preexisting health issues that put them at increased risk for melioidosis, including chronic obstructive pulmonary disease and cirrhosis.

Lylah’s doctors at Children’s Medical Center Dallas were unavailable to talk about her case, a spokesperson said, but with the family’s permission confirmed key details of her medical history. State health department officials in Texas and Kansas, who are involved in the investigations, have not responded to interview requests and questions since July 1.

In Minnesota, the infected person is an adult with underlying health conditions, said Doug Schultz, a spokesperson for the Minnesota Department of Health. The department learned about the person’s infection when a clinical lab sent a bacterial sample from the person to the state public health laboratory for confirmation. The person’s infection was then linked to the other cases when the CDC ran whole genome sequencing on the bacteria, said Schultz, who said he couldn’t provide further details.

“We are just beginning our investigation,” Schultz said in an email. “We are conducting a thorough investigation into medical history, what household products the case used, their

hobbies, and foods consumed. This will be compared to other states to see if there are any commonalities."

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The CDC said none of the three people had any recent travel history outside the areas near their homes, "therefore there are no known common links pertaining to travel inside or outside of the US."

Investigating household items, soil, a pet fish as possible sources – or not

Lylah, who had no previous health problems, lives with her parents and 1-year-old sister in the small town of Bells, about 60 miles northeast of Dallas. She hasn't traveled much in her lifetime, other than for an annual family beach vacation to Port Aransas, on the Gulf of Mexico near Corpus Christi. "I don't think she's ever left Texas," her aunt told me.

Health investigators visited Lylah's extended family early this month to take blood samples from about a dozen of them and ask about a wide range of items the little girl might have been exposed to. The investigators have told the family that because Burkholderia pseudomallei bacteria survive best in a moist environment, they are "mainly interested in liquid products."

Among the items they've asked family members to provide samples of for testing: any liquid vitamins, supplements or medications Lylah might have taken; a wide range of household cleaning items, including laundry detergent, bathroom and floor cleaners, deodorizing sprays and dish soap; and personal cleaning items such as hand soap and sanitizer, hand and body wipes and mouthwash the child might have used. They've also asked about packaged fruit items, such as juices, fruit cups and applesauce, as well as wanting to know broadly about any products Lylah may have had contact with that are believed to have been imported.

Investigators have expressed interest in a pet Betta fish that Lylah got during the winter and that died in February, Kennon said, and were hoping to possibly test the aquarium or any items that were in it. Betta, also called Siamese fighting fish, are a type of tropical freshwater fish native to Southeast Asia.

Another area they are investigating: garden soil and plants that might have been imported, Kennon said, adding that health officials will be testing soil samples from the places Lylah

has been. In the days before she first started feeling ill on May 24, Lylah had been helping one of her grandmothers plant flowers, Kennon said, and they are being tested too.

Speaking out: An officer's vaccine fear may have killed him. His widow tries to save others, his legacy.

It's important to know that none of these items may have anything to do with the source of Lylah's infection. That's why a systematic, in-depth investigation is so critical.

This early in an investigation the disease detectives from the CDC and state health departments are casting a wide net, looking into many possible suspects. Using standardized lists of products and activities, they're asking questions of all of the families in the outbreak, seeking similarities between items the patients were exposed to. And they're testing dozens of products and soil samples – as well as family members – to see if they can find the bacteria.

It's a painstaking process that takes time.

Not everyone exposed will get sick

Burkholderia pseudomallei bacteria are not considered to be easily spread from person to person. In countries where the bacteria are commonly found, people and animals are usually infected by coming into direct contact with soil or water where the bacteria are living and growing, such as by inhaling bacteria-contaminated dust or water droplets, or bacteria entering through a cut in the skin.

Not everyone who is exposed will become ill. For those who do, it can then take a day to many years between when a person is exposed and when they start developing symptoms of melioidosis, though the CDC says symptoms generally appear within two to four weeks. Getting an accurate diagnosis can be difficult because they symptoms are so nonspecific.

Could an accident have caused COVID-19?: Why the Wuhan lab-leak theory shouldn't be dismissed

According to the CDC, the only places in the United States where Burkholderia pseudomallei occurs naturally are Puerto Rico and the U.S. Virgin Islands. While about a dozen cases of melioidosis are diagnosed in the U.S. each year, these tend to be people who have a history of living in or traveling to tropical areas where the bacteria are typically found. So cases of melioidosis are very rare in this country.

The last time I reported on Burkholderia pseudomallei was because of a lab accident in late 2014 at the Tulane National Primate Research Center in Louisiana that raised concerns bacteria may have been released into the surrounding environment.

Researchers were working inside a secure biosafety level 3 laboratory with multiple layers of safeguards, yet the bacteria got out of one of the center's labs and infected monkeys that had never been used in experiments and were kept elsewhere on the property. A federal investigation found that sloppy biosafety practices and workers wearing contaminated clothing outside the lab were the likely ways the bacteria were tracked to where the monkeys became infected. Environmental testing after the safety breach did not find the bacteria outdoors on the lab's property.

It's serious mistakes like these, made by scientists with the best of intentions at a prestigious facility, that go to why a thorough, independent investigation of all plausible causes of the current COVID-19 pandemic – including the potential for a lab accident – continue to be needed.

This 500-acre research laboratory and primate breeding facility 35 miles north of New Orleans is among dozens of academic and government labs across the country that have been conducting experiments with Burkholderia pseudomallei, research fueled by bioterrorism preparedness funding and the need to develop tests, treatments and vaccines. Because Burkholderia pseudomallei poses such a severe risk to public health and has potential for misuse as a bioweapon it's on the U.S. government's Tier 1 "select agent" list of pathogens – which also includes the Ebola virus and the bacteria that cause anthrax and plague.

The CDC said there is currently no evidence to suggest the three melioidosis cases are the result of a biological attack. The suspected source of the infections, based on the CDC's health alert and the questions being asked of Lylah's family, is an imported product or animal.

"Testing suggests a common source of infection, but that source has not yet been identified," the CDC said in its statement.

While some scientists suspect that Burkholderia pseudomallei bacteria may be lurking undetected in the soil in parts of the southern United States, the CDC apparently doesn't think that's the culprit with the three recent cases. The CDC's statement said the agency's genetic analysis of the bacteria from the three patients indicates they didn't get infected

from a natural reservoir of bacteria in North America, because the strains aren't similar to those found in the Americas.

The CDC did not answer questions about the name of the strain involved in the outbreak or where that strain is found.

Last year, scientists from the CDC and the Texas Department of State Health Services suggested in a journal article that it's possible Burkholderia pseudomallei may be endemic in Texas and some other warm-weather states. In analyzing the genomes of bacteria taken from two Texas residents who were separately sickened with melioidosis – one in 2004 and the other in 2018 – they found intriguing similarities. And additional similarities were found among the genomes of bacteria that over the years have sickened other patients who were residents of North America.

The genetic fingerprints in the current outbreak investigation involving Lylah and the people in Minnesota and Kansas appear to be pointing to a source outside the United States. But where? And how? There are more questions than answers about how three people's lives have been devastated in recent months.

'Miracles have been worked'

For Lylah and her family, the questions aren't just about how she was infected. Some of the biggest questions involve what is ahead of them.

"I think a lot of people, I think they think she's just recovering in bed, getting stronger in bed," her aunt said. "It's the brain damage she's having to recover from. It's starting all over again and not knowing what the future is."

Caring for kids during, after COVID: Always know your favorite dinosaur and princess

On Thursday, Lylah moved to a specialty children's rehabilitation hospital in Dallas where her family hopes she will be able to spend at least the next 30 days, insurance willing, receiving intensive physical, occupational and speech therapy to help overcome the lesions on her brain. Her parents will stay there with Lylah, Kennon said, supporting her through the therapy and also learning how to care for her when she moves back home.

Lylah's mom, Josy, is on unpaid leave from her job at a veterinary clinic, Kennon said. Her dad, Dustin, is a firefighter paramedic, whose colleagues in Denison, Texas, have been helping support the family by taking on his shifts and donating their work. Lylah's

grandparents have been taking turns caring for her baby sister, Addie. There have been community fundraisers at local restaurants, Venmo donations and a GoFundMe page.

The support the family has received has been amazing, Kennon said.

“It’s just the fear of the unknown,” she said. “The miracles have been worked. She’s pretty much survived the unimaginable. She’s definitely beaten the odds, that’s for sure. So everything she does is a huge success for us.”

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